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Original Article

Exploring Obstacles and Successes: Completeness of Toddler Immunization During the COVID-19 Pandemic

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Abstract
The importance of immunization can be seen from the number of toddlers who die from diseases that can be prevented by vaccination (VPD). This research aims to determine the factors related to the completeness of basic immunization among toddlers aged 12-23 months during the Covid-19 pandemic in Layana Village, Mantikulore District, Palu City. This type of research is an analytical survey method using a cross sectional approach. Determination of the sample in this research was carried out using Proportional Random Sampling. The sample taken was 63 people and used Chi-square test data analysis. The results of this study show that there is no relationship between knowledge and completeness of basic immunization in toddlers with a p-value = 0.211 (p > 0.05), there is no relationship between motivation and completeness of basic immunization in toddlers with a value of, p-value = 1.000 (p > 0.05), and there is no relationship between the role of health workers and completeness of basic immunization for toddlers with p-value = 0.253 (p > 0.05). This research recommends increasing the level of maternal knowledge regarding the completeness of immunization by increasing outreach in each sub-district and providing health education to posyandu cadres so that they can assist health workers in increasing community knowledge regarding immunization.

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Introduction
Immunization is a form of health intervention that is very effective in reducing infant and toddler mortality rates (1–3). Immunization can prevent various diseases such as tuberculosis, diphtheria, whooping cough (pertussis), tetanus, hepatitis B, etc. (4,5). The importance of immunization can be seen from the number of toddlers who die from diseases that can be prevented by vaccination (VPD) (6,7). Actually, it doesn't have to happen because immunization can prevent these diseases.

The World Health Organization (WHO) reports that nearly 6 million children under the age of five have died, 16% of them from pneumonia, the leading cause of death for children under the age of five worldwide. Based on data from the United Nations Children's Fund (UNICEF). The average immunization rate in Indonesia is only 72%. This means that numbers are very low in some areas. Around 2,400 children die every day in Indonesia, including children who die from preventable causes such as measles, diphtheria, tetanus, pertussis and hepatitis B.

In Indonesia, the immunization program requires all babies aged 0-11 months to have a complete primary immunization cycle consisting of 1 dose of Hepatitis B, 1 dose of BCG, 3 doses of DPT-HB-Hib, 4 doses of polio drop, and 1 dose of measles according to the calendar. immunization. Based on 2020 basic research, The target for primary series completion in 2020 is stated to be 83.3%. This figure does not meet the 2020 Strategic Plan target of 92.9%. Complete basic immunization coverage for infants and toddlers in 2020 is the lowest complete

basic immunization coverage in the period 2011 – 2020 as a result of the COVID-19 pandemic. Central Sulawesi is the 9th province with complete basic immunization of 87%.

It is known that the 2020 Central Sulawesi health profile achieved complete basic immunization coverage in Central Sulawesi at 86.8% with an annual target of 92.9%. This shows that IDL coverage has not met or has not reached the target compared to 2019 which reached 93.2%. Immunization coverage in Palu City is 90.3%, which is the 6th achievement level out of 13 regencies/cities in Central Sulawesi.

The Talise Health Center consists of 4 areas, namely Talise, Valangguni, Tondo and Layana, where in 2021 the number of mothers who have toddlers aged 12-23 months is 1,634 people, where the number of toddlers aged 12-23 months in the Talise area is 671, Valangguni 218 toddlers, Tondo 568 toddlers and Layana 177 toddlers. The complete basic immunization coverage data in 2021 in Talise sub-district is 99.4%, Valangguni sub-district is 99.0%, Tondo sub-district is 99.6%, and Layana sub-district is 98.8%.

Mothers with toddlers aged 12-23 months were asked for information about immunization protection (8). Immunization programs are very important for the role of mothers. the same situation applies to maternal Knowledge, Motivation, and the Role of Health Workers (9–12). The lack of socialization by health workers is also the cause of low understanding and non-compliance by parents regarding the immunization program for toddlers. In accordance with the data, it can be concluded that promotive and preventive efforts have not run optimally.

Implementing complete basic immunization is very important in reducing morbidity and death rates due to diseases that can be prevented by immunization. Therefore, complete basic immunization is important to improve the health status of toddlers and there is no previous research that encourages researchers to find out the factors related to the completeness of basic immunization in toddlers aged 12-23 months during the COVID-19 pandemic in Layana Village, Mantikulore District, Palu City.

Methods

This type of research is an analytical survey method using a cross sectional approach. Determination of the sample in this research was carried out using Proportional Random Sampling. The sample taken was 63 people and used Chi-square test data analysis. The sample used in this research was mothers who had toddlers aged 12-23 months in Layana Village. The variables studied were Knowledge, Motivation, Role of Health Workers and Basic Immunization Completeness.

Results

Respondent Characteristics based on Age

The distribution of respondents based on maternal age in Layana Village, Mantikulore District, Palu City can be seen in table 1.

Table 1. Distribution of Respondents According to Age

Age	Frequency	Percentage (%)
20– 25 Year	19	30
26-31 Year	26	41
32-37 Year	13	21
38-45 Year	5	8
Amount	63	100

Source: primary data, 2022

Characteristics of Respondents according to Mother's Education Level

The distribution of respondents based on education level in Layana Village, Mantikulore District, Palu City can be seen in table 2.

Table 2. Distribution of Respondents According to Education Level

Gender	Frequency	Percentage (%)
Finished elementary	5	8

school		
Finished middle school	10	16
Finished high school	35	55
College	13	21
Amount	63	100

Source: primary data, 2022

Characteristics of Respondents by Occupation

The distribution of respondents based on occupation in Layana Village, Mantikulore City District can be seen in table 3.

Table 3. Distribution of Respondents According to Occupation

Work	Frequency	Percentage (%)
Housewife	37	59
Government employees	20	31
Midwife/Nurse	2	3
Factory workers	4	7
Amount	63	100

Source: primary data, 2022

Univariate Analysis

Distribution of Respondents Based on Knowledge

The distribution of respondents based on knowledge in Layana Village, Mantikulore District, Palu City can be seen in table 4.

Table 4. Distribution of Respondents based on Knowledge

Knowledge	Amount (n)	Percentage (%)
Low	29	46
Tall	34	54
Amount	63	100

Source: primary data, 2022

Distribution of Respondents Based on Motivation

The distribution of respondents based on motivation in Layana Village, Mantikulore District, Palu City can be seen in table 5.

Table 5. Distribution of Respondents based on Motivation

Motivation	Amount (n)	Percentage (%)
Not good	22	34,9
Good	41	65,1
Amount	63	100

Source: primary data, 2022

Distribution of Respondents Based on the Role of Health Workers

The distribution of respondents based on the role of health workers in Layana Village, Mantikulore District, Palu City can be seen in table 6.

Table 6. Distribution of Respondents based on the Role of Health Workers

Role of Health Workers	Amount (n)	Percentage (%)
No Role	24	38,1
Play a role	39	61,9
Amount	63	100

Source: primary data, 2022

Distribution of Respondents Based on Basic Immunization Completeness

The distribution of respondents based on Basic Immunization Completeness in Layana Village, Mantikulore District, Palu City can be seen in table 7.

Table 7. Distribution of Respondents based on Basic Immunization Completeness

Basic Immunization Equipment	Amount (n)	Percentage (%)
Incomplete	14	22,2
Complete	49	77,8
Amount	63	100

Source: primary data, 2022

Bivariate Analysis

The Relationship Between Mother's Knowledge and Completeness of Basic Immunization in Toddlers Aged 12-23 Months

To find out mothers' knowledge of basic immunization equipment for toddlers aged 12-23 months, see table 8.

Table 8 Distribution of Mother's Knowledge regarding Basic Immunization Completeness for Toddlers Aged 12-23 Months in Layana Village, Mantikulore District, Palu City

Knowledge	Basic Immunization Completeness Status				Total	
	Incomplete		Complete			
	N	%	N	%	N	%
Low	9	31	20	69	29	100
Tall	5	14,7	29	85,3	34	100
Total	**14**	**22,2**	**49**	**77,8**	**63**	**100**

Source: primary data, 2022

The Relationship Between Motivation and Completeness of Basic Immunizations in Toddlers Aged 12-23 Months

To find out the relationship between motivation and completeness of basic immunizations for toddlers aged 12-23 months, see table 9.

Table 9. Distribution of Motivation with Basic Immunization Completeness for Toddlers Aged 12-23 Months in Layana Village, Mantikulore District, Palu City

Motivation	Basic Immunization Completeness Status				Total	
	Incomplete		Complete			
	N	%	N	%	N	%
Not good	5	22,7	17	77,3	22	100
good	9	22	32	78	41	100

Total	**14**	**22,2**	**49**	**77,8**	**63**	**100**

Source: primary data, 2021

The Relationship Between the Role of Health Workers and Completeness of Basic Immunizations in Toddlers Aged 12-23 Months

To find out the role of health workers in basic immunization equipment for toddlers aged 12-23 months, see table 10.

Table 10. Distribution of the Role of Health Workers with Basic Immunization Completeness for Toddlers Aged 12-23 Months in Layana Village, Mantikulore District, Palu City

Role of Health Workers	Basic Immunization Completeness Status				Total	
	Incomplete		Complete			
	N	%	N	%	N	%
No Role	3	12,5	21	87,5	24	100
Play a role	11	28,2	28	71,8	39	100
Total	**14**	**22,2**	**49**	**77,8**	**63**	**100**

Source: primary data, 2022

Discussion

Relationship between Mother's Knowledge and Completeness of Basic Immunization in Toddlers Aged 12-23 Months

The research results showed that of the 34 respondents (54%) who had high knowledge, 29 (85.3%) had complete basic immunization and 5 people (14.7%) had incomplete basic immunization. Meanwhile, of the 29 people (46%) who had low knowledge, there were 20 people (69.0%) who had complete basic immunization and 9 people (31%) had incomplete basic immunization. Statistical test analysis using the Chi-square test obtained a value of P (0.211) > α (0.05), so it can be concluded that there is no relationship between the level of maternal knowledge and the completeness of basic immunization for toddlers aged 12-23 months in the Layana sub-district, Mantikulore District, Palu City.

According to several studies, parental knowledge will influence the completeness of a child's immunization status. The better the parent's knowledge, the better or complete the child's immunization status and vice versa (13–16). Knowledge will shape the mother's attitude, in this case compliance in providing complete basic immunization (17). In this study, the enabling factor was the availability of posyandu immunization facilities in each RT. However, the reason for the low participation of mothers in participating in posyandu activities is due to the length of service at the posyandu.

Strengthening factors consist of the role of immunization officers as community health center officers who provide motivation and support to mothers and the important community and the benefits of immunization and the role of cadres who provide support and do not hesitate to pick up mothers and their toddlers to carry out and participate in immunization activities at the posyandu post.

According to researchers' assumptions, the relationship between the mother's level of knowledge and the completeness of basic immunization for toddlers is due to a good knowledge base. This shows that the better the mother's knowledge, the better the achievement of basic immunization for toddlers. However, mothers who have less knowledge does not mean that their basic immunizations are incomplete. Because in this study, even though the mother had less knowledge, her toddler had complete basic immunization. This is due to the close distance between the house and the posyandu and the support from health workers.

The Relationship between Maternal Motivation and Completeness of Basic Immunizations in Toddlers Aged 12-23 Months

The research results showed that of the 41 respondents (65.1%) who had good motivation, 32 people (78%) had complete basic immunization and 9 people (22%) had incomplete basic immunization. Meanwhile, of the 22 people (34.9%) who had poor motivation, there were 17 people (77.3%) who had complete basic immunization and 5 people (22.7%) who had incomplete basic immunization. Statistical test analysis using the Chi-square test obtained a value of P (1,000) > α (0.05), so it can be concluded that there is no relationship between maternal motivation and completeness of basic immunization in toddlers aged 12-23 months in Layana sub-district, Mantikulore District, Palu City.

The extrinsic motivation that is the cause of incomplete basic immunization in toddlers is rumors heard by mothers regarding immunization, such as the view that immunizations are listed as useless, immunizations can cause toddlers to get sick, these immunizations are also haram to be given to toddlers and so on (18,19). Another extrinsic motivation that influences the completeness of immunization for toddlers is the mother's trust in the immunization. With these negative assumptions, it encourages parents/mothers not to immunize their toddlers.

Therefore, it is recommended that health workers provide direction/encouragement to parents, especially mothers, to change negative assumptions about immunization by conducting routine counseling. This counseling is prioritized for mothers who do not provide complete basic immunization to their toddlers so that they provide complete immunization to their children. their toddler is next.

According to the researcher's assumption, the good motivation of respondents has an impact on the complete status of basic immunization for toddlers in the Layana sub-district, Mantikulore sub-district, Palu city. Good motivation can facilitate the dissemination of information about the importance and impact of not participating in immunization activities to people in the surrounding environment who have toddlers if they do not participate in or participate in immunization activities. Differences in mother's motivation have a significant relationship with mother's behavior in providing basic immunization to toddlers. Mothers with less motivation have a greater chance of having negative behavior in providing basic immunization to toddlers and good motivation have a greater chance of having positive behavior in providing basic immunization to toddlers.

The Relationship between the Role of Officers and Completeness of Basic Immunization in Toddlers Aged 12-23 Months

The results of the study showed that of the 39 respondents (61.9%) who had an officer role, 28 people (71.8%) had complete basic immunization and 11 people (28.2%) had incomplete basic immunization. Meanwhile, of the 21 people (87.5%) who had no role as officers, there were 17 people (77.3%) who had complete basic immunization and 3 people (12.5%) had incomplete basic immunization. Statistical test analysis using the Chi-square test obtained a value of P (0.253) > α (0.05), so it can be concluded that there is no relationship between the role of officers and the completeness of basic immunization for toddlers aged 12-23 months in Layana sub-district, Mantikulore District, Palu City.

One of the efforts to support improving the quality of health services is the development of health human resources through the implementation of various education and training on an ongoing and sustainable basis to produce competent professional resources who have morals and ethics, are highly dedicated, creative and innovative, and have an anticipatory attitude. to various local and global changes (20,21). Competency of health workers as mandated by the Republic of Indonesia Minister of Health Regulation Number 46 of 2013 concerning Registration of Health Workers is one of the nodes for measuring the skills of a health worker (9).

The completeness of immunization can be influenced by various factors, one of which is the role of health workers. This shows that health workers are at the forefront of implementing immunization programs in the community. A health worker is any person who dedicates themselves to the health sector and has knowledge and/or skills through education in the health sector, which for certain types requires authority to carry out health efforts.

According to several studies, the implementation of immunization cannot be separated from the role of health workers who have direct contact with both the community and infrastructure. The role of health workers in the immunization program includes planning, implementing immunization, managing the vaccine chain, handling waste, personnel standards and technical training, recording and reporting, technical supervision and guidance, as well as monitoring and evaluation (11,22–24).

The role of health workers (midwives, nurses, doctors) plays a role in improving the health status of children under five, as well as changing unhealthy community behavior towards healthy behavior. In carrying out their role, health workers must be able to make the public aware, especially mothers with toddlers, about the importance of complete basic immunization. Therefore, health workers are expected to be able to carry out preventive activities which include: providing education on the importance of basic immunization, teaching mothers with toddlers about the immunization schedule, mobilizing the role of cadres at the village posyandu level, carrying out immunizations for toddlers, documenting every immunization given at toddler.

According to the researcher's assumption, the research results confirm that the role of health workers in completing basic immunization for toddlers is more in the role category with complete basic immunization status. This is based on the fact that during the implementation of immunization, health workers provide in-depth

counseling regarding the implementation of basic immunization, both providing information regarding the benefits, objectives, types of follow-up immunization, as well as the schedule for providing basic immunization.

Public Health Implications

Innovations in Health Services: Several countries have adopted innovations such as mobile immunization, where health workers visit homes to administer vaccines to toddlers, overcoming barriers to access to health facilities.

Collaboration Between Sectors: Collaboration between the health sector and other sectors, such as education and transportation, can help ensure timely and efficient vaccine distribution.

Awareness Campaigns: A strong information campaign program about the importance of immunization during the pandemic can help raise awareness and motivate parents to take their children for vaccination.

Increased Virtual Access: Providing virtual immunization consultations or telemedicine can help address concerns about exposure to COVID-19 while still providing safe and convenient access to immunization services.

Public Health Priority: Awareness of the importance of public health can encourage governments and health institutions to prioritize immunization programs, even in the midst of a pandemic.

Cautions and Limitations

Cautions

Access Gaps: Despite innovations in health services such as mobile immunization, there remains a risk that some communities, especially remote or underserved ones, may remain difficult to reach.

Socio-Economic Inequalities: Parents from lower or vulnerable strata of society may face extra difficulties in accessing immunizations for their children during the pandemic, increasing existing health inequalities.

Potential Emergence of Other Diseases: Decreased immunization coverage could increase the risk of outbreaks of diseases other than COVID-19, such as measles or polio, which could pose an additional burden on the health system.

Limitations

Limited Resources: Logistical constraints, including a lack of vaccines or medical personnel, as well as limited infrastructure in providing immunization services, may limit the ability to respond to toddler immunization needs during the pandemic.

Community Acceptance: Not all parents may accept innovative methods such as mobile immunization or virtual immunization consultations, which may limit the effectiveness of these strategies in achieving immunization completeness.

Pandemic Variability: Uncertainties related to the epidemiology of COVID-19, including fluctuations in infection rates and response policies, may lead to sudden changes in access and acceptability of immunizations.

Future Research Recommendation

It is recommended that the Community Health Center be able to increase the level of knowledge of mothers regarding the completeness of immunization by providing counseling in each sub-district and health education to posyandu cadres so that they can assist health workers in increasing public knowledge regarding immunization.

Conclusion

This research concludes that there is no relationship between maternal knowledge and completeness of basic immunization for toddlers aged 12-23 months during the Covid-19 pandemic in Layana Village, Mantikulore District, Palu City, (p value = 0.211 α > 0.05). mothers with complete basic immunization for toddlers aged 12-23 months during the Covid-19 Pandemic in Layana Village, Mantikulore District, Palu City, (p value = 1,000 α > 0.05). And there is no relationship between the role of health workers and the completeness of basic immunization for toddlers aged 12-23 months during the Covid-19 pandemic in Layana Village, Mantikulore District, Palu City, (p value = 0.253 α > 0.05)

Author Contribution

The author is responsible for the formulation and implementation of the research methodology. The author also plays a role in interpreting the findings and compiling the methodology and results sections in the paper.

The writer focuses on providing relevant context and background in the writing. The author also contributes to the discussion of policy implications and recommendations.

The author is responsible for analyzing the implications of the research findings and providing recommendations that can be applied in a public health context. The author also provides insight into ways to overcome obstacles encountered and identifies future research directions.

Conflict of Interest Statement

The author clarifies that there are no conflicts of interest that could affect objectivity, honesty, or integrity in writing this article. The authors have no financial affiliations or personal relationships that could influence their perspective on the topics discussed. Additionally, the authors have no interest in any companies, products, or services that may benefit from the results or interpretations of the research presented in this article.

In conducting the research and compiling this article, the authors committed to following strict principles of research ethics, including transparency, integrity, and objectivity. The authors received no funding or support from any party that might have an interest in the results or interpretation of the findings reported in this article.

The author aims to present information that is accurate, balanced and useful to readers without any inappropriate external influences. All opinions, conclusions and recommendations expressed in this article are based on objective evidence and analysis and are not influenced by considerations of personal or commercial interests.

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